

WE CLAIM:

1. A wear assembly comprising:

an adapter having a rear mounting end for securing the assembly to a wear surface and a forwardly extending nose;

a wear member defining a longitudinal axis and including a front working end and a rearwardly opening socket for receiving the nose, the socket being defined by opposed converging surfaces each extending at an inclination to the longitudinal axis and by side surfaces, each side surface including a side bearing surface between the converging surfaces to engage the adapter, wherein each side bearing surface faces toward a different one of the converging surfaces and extends generally in the same inclined direction relative to the longitudinal axis as the converging surface the side bearing surface faces; and

a lock to hold the wear member to the adapter.

2. A wear assembly in accordance with claim 1 in which a forward end of the socket includes opposed bearing surfaces extending between the side surfaces, and each of the bearing surfaces extends generally parallel to the longitudinal axis.

3. A wear assembly in accordance with claim 1 in which each of the side surfaces includes a flank bearing surface that faces toward a different one of the converging walls than the side bearing surface of the same side surface.

4. A wear assembly in accordance with claim 3 in which each flank bearing surface widens as it extends rearward.

5. A wear assembly in accordance with claim 4 in which each side bearing surface is uniformly spaced from the converging surface that it faces along substantially its entire length.

6. A wear assembly in accordance with claim 3 in which the nose includes sidewalls and converging walls, the sidewalls each including a rail and a flank, wherein each rail contacts one of the side bearing surfaces and each flank contacts one of the flank bearing surfaces.

7. A wear assembly in accordance with claim 1 in which each side bearing surface is uniformly spaced from the converging surface that it faces along substantially its entire length.

8. A wear assembly in accordance with claim 1 wherein each side bearing surface is at an acute angle in a transverse direction to the converging wall it faces.

9. A wear assembly in accordance with claim 1 in which the nose includes sidewalls and converging walls, and the sidewalls each include a rail that contacts one of the side bearing surfaces of the socket.

10. A wear assembly in accordance with claim 1 in which the side surfaces diverge as they extend forward.

11. A wear assembly in accordance with claim 1 wherein the side bearing surfaces diverge as they extend away from the front working end.

12. A wear assembly in accordance with claim 11 in which the side bearing surfaces extend along substantially parallel planes aligned generally along the side surfaces of the socket.

13. A wear assembly in accordance with claim 1 in which the front working end terminates as a narrowed front end.

14. A wear assembly in accordance with claim 13 in which the side bearing surfaces diverge from opposite sides of a plane aligned with the longitudinal axis and extending along the narrowed front end.

15. A wear assembly in accordance with claim 1 in which the wear member is a point with a front digging edge.

16. A wear assembly in accordance with claim 1 in which the socket has a generally Z-shaped cross-sectional configuration over a substantial portion of its length.

17. A wear assembly in accordance with claim 1 wherein the nose includes a pair of diverging rails, and the side bearing surfaces partially define grooves for receiving the rails.

18. A wear assembly in accordance with claim 1 in which the adapter includes a channel for receiving a lock, and the channel and the lock each narrow along a portion of its length.

19. A wear assembly in accordance with claim 18 in which the channel has a closed end and extends only partially through the adapter.

20. A wear assembly in accordance with claim 18 in which the channel and lock gradually narrow along substantially their entire lengths.

21. A wear assembly in accordance with claim 1 in which the adapter includes a channel for receiving the lock, and the lock includes a lock member for securing the lock in the channel.

22. A wear assembly in accordance with claim 21 wherein the lock member is a set screw.

23. A wear assembly in accordance with claim 21 wherein the lock member is a resiliently biased detent.

24. A wear assembly in accordance with claim 21 in which an indent is formed in the channel for receiving a portion of the lock member.

25. A wear assembly comprising:
an adapter having a rear mounting end for securing the assembly to a wear surface and a forwardly extending nose having a pair of rails;
a wear member defining a longitudinal axis and including a pair of converging walls extending to a narrowed front working end, a pair of sidewalls, and a rearwardly opening socket having a pair of grooves each on opposite sides of the socket for receiving the rails, wherein each groove diverges from a plane aligned with the longitudinal axis and extending along the narrowed front working end; and
a lock for securing the wear member to the adapter.

26. A wear assembly in accordance with claim 25 in which the socket has a generally Z-shaped cross-sectional configuration over a substantial portion of its length.

27. A wear assembly in accordance with claim 25 in which a front end of the socket includes opposed front bearing surfaces extending between the opposite sides of the socket, and each of the front bearing surfaces extends generally parallel to the longitudinal axis.

28. A wear assembly in accordance with claim 25 in which each groove has a substantially constant width and depth along substantially its entire length.

29. A wear assembly in accordance with claim 25 in which the grooves extend along substantially parallel planes aligned generally along the sidewalls of the wear member.

30. A wear assembly in accordance with claim 25 in which the wear member is a point and the narrowed working end is a digging edge.

31. A wear assembly in accordance with claim 25 in which the adapter includes a channel for receiving a lock, and the channel and the lock each narrow along a portion of its length.

32. A wear assembly in accordance with claim 31 in which the channel has a closed end and extends only partially through the adapter.

33. A wear assembly in accordance with claim 31 in which the channel and lock gradually narrow along substantially their entire lengths.

34. A wear assembly in accordance with claim 25 in which the adapter includes a channel for receiving the lock, and the lock includes a lock member for securing the lock in the channel.

35. A wear assembly in accordance with claim 34 wherein the lock member is a set screw.

36. A wear assembly in accordance with claim 34 wherein the lock member is a resiliently biased detent.

37. A wear assembly in accordance with claim 34 in which an indent is formed in the channel for receiving a portion of the lock member.

38. A wear assembly comprising:

an adapter having a rear portion adapted to be secured to a wear surface;

a wear member having a pair of converging walls and a pair of sidewalls;

wherein one of the adapter and wear member includes a nose, the nose having a pair of converging walls and a pair of sidewalls, and the other of the adapter and wear member includes a socket for receiving the nose;

wherein one of the nose and socket includes a generally longitudinal rail along each of the sidewalls, and one of the rails is inclined generally in the same direction as each of the converging walls; and

wherein the other of the nose and socket includes a pair of grooves to receive the rails; and

a lock to hold the wear member to the adapter.

39. A wear assembly in accordance with claim 38 in which distal ends of the socket and nose each includes opposed distal bearing surfaces extending between the sidewalls, wherein each of the distal bearing surfaces extends generally parallel to longitudinal axis of the nose.

40. A wear assembly in accordance with claim 38 in which one of the grooves extends generally parallel to each of the converging walls.

41. A wear assembly in accordance with claim 38 in which each groove includes a bearing surface to contact one of the rails, wherein the bearing surface of one groove faces a different one of the converging walls than the bearing surface of the other groove.

42. A wear assembly in accordance with claim 41 wherein each bearing surface is at an acute angle in the transverse direction to the converging wall it faces.

43. A wear assembly in accordance with claim 38 wherein the nose and the socket each have a generally Z-shaped configuration over a substantial portion of its length.

44. A wear assembly in accordance with claim 38 in which the wear member is a point with a front digging edge.

45. A wear assembly in accordance with claim 38 in which the adapter includes a channel for receiving a lock, and the channel and the lock each narrow along a portion of its length.

46. A wear assembly in accordance with claim 38 in which the adapter includes a channel for receiving the lock, and the lock includes a lock member for securing the lock in the channel.

47. A wear assembly in accordance with claim 46 in which an indent is formed in the channel for receiving a portion of the lock member.

48. A wear assembly comprising:

an adapter having a rear mounting end adapted to secure the wear assembly to a wear surface and a forwardly extending nose;

a wear member including a front working end and a rearwardly opening socket, wherein the socket has a generally Z-shaped configuration over at least a substantial portion of its length; and

a lock for securing the wear member to the adapter.

49. A wear assembly in accordance with claim 48 in which a front end of the socket includes opposed front bearing surfaces extending between the sidewalls, and each of the front bearing surfaces extends generally parallel to a longitudinal axis of the wear member.

50. A wear assembly in accordance with claim 48 in which the nose has a generally Z-shaped cross sectional configuration along at least a substantial portion of its length to be matingly received in the socket.

51. A wear assembly in accordance with claim 48 in which the Z-shaped socket includes a pair of lateral extensions in opposite corners, wherein the lateral extensions diverge as they extend rearward.

52. A wear assembly in accordance with claim 51 wherein the wear member includes a pair of converging surfaces that form the front working end includes a narrowed front end, and wherein the lateral extensions of the socket diverge from opposite sides of a plane aligned with the longitudinal axis and extending along the narrowed end.

53. A wear assembly in accordance with claim 48 in which the Z-shaped socket includes a pair of lateral extensions in opposite corners, and the lateral extensions form inner lateral bearing surfaces that are generally parallel to the longitudinal axis of the wear member.

54. A wear assembly in accordance with claim 48 in which the adapter includes a channel for receiving a lock, wherein the channel and the lock each narrow along a portion of its length.

55. A wear assembly in accordance with claim 48 in which the wear member is a point with a front digging edge.

56. A wear assembly in accordance with claim 48 in which the adapter includes a channel and the lock includes a lock member for securing the lock in the channel.

57. A wear assembly in accordance with claim 56 in which an indent is formed in the channel for receiving a portion of the lock member.

58. A wear assembly comprising:

an adapter including a rear mounting end for securing the wear assembly to a wear surface and a forwardly extending nose;

a wear member defining a longitudinal axis and including a front working end and a rearwardly opening socket for receiving the nose;

the nose and socket including plurality of cooperating linear rails and grooves that require the wear member to rotate generally about the longitudinal axis when installed and removed from the nose; and

a lock to hold the wear member to the adapter.

59. A wear assembly in accordance with claim 58 in which a front end of the socket includes opposed front bearing surfaces that extend generally parallel to the longitudinal axis.

60. A wear assembly in accordance with claim 58 wherein the rails and grooves on opposite sides of the nose and socket diverge as they extend away from the front working end.

61. A wear assembly in accordance with claim 60 in which the walls defining the sides of the nose and socket extend generally in substantially parallel planes.

62. A wear assembly in accordance with claim 58 in which the wear member is a point with a front digging edge.

63. A wear assembly in accordance with claim 58 in which the front working end terminates in a narrowed front end.

64. A wear assembly in accordance with claim 63 in which the rails diverge from opposite sides of a plane aligned with the longitudinal axis and extending along the narrowed front end.

65. A wear assembly in accordance with claim 58 in which the nose and socket each has a generally Z-shaped cross-sectional configuration over a substantial portion of its length.

66. A wear assembly in accordance with claim 58 wherein the nose includes one of the rails on each of a pair of opposite sides, and the socket includes a side bearing surface in each of the grooves for engaging the rails.

67. A wear assembly in accordance with claim 58 in which the adapter includes a channel for receiving a lock, and the channel and the lock each narrow along a portion of its length.

68. A wear assembly in accordance with claim 67 in which the channel and lock gradually narrow along substantially their entire lengths.

69. A wear assembly in accordance with claim 58 in which the adapter includes a channel for receiving the lock, and the lock includes a lock member for securing the lock in the channel.

70. A wear assembly in accordance with claim 69 wherein the lock member is a set screw.

71. A wear assembly in accordance with claim 69 wherein the lock member is a resiliently biased detent.

72. A wear assembly in accordance with claim 69 in which an indent is formed in the channel for receiving a portion of the lock member.

73. A wear assembly comprising:
an adapter including a rear mounting end for securing the wear assembly to a wear surface and a forwardly extending nose having rails;
a wear member including a front working end and a rearwardly opening socket defined by side surfaces and converging surfaces, the socket having a groove on each of the side surfaces for receiving the rails, the grooves each being defined by one of the converging surfaces on one side of the groove and a side bearing surface on the other side of the groove, wherein the side bearing surfaces face in opposite directions; and
a lock for holding the wear member to the adapter.

74. A wear assembly in accordance with claim 73 wherein the side bearing surfaces extend generally at the same inclination as the converging surface which it faces.

75. A wear assembly in accordance with claim 74 wherein the socket has a substantially Z-shaped configuration along a substantial portion of its length.

76. A wear assembly in accordance with claim 73 wherein the side bearing surfaces each extends generally parallel to the longitudinal axis of the wear member.

77. A wear assembly in accordance with claim 73 wherein the socket has a substantially Z-shaped configuration along a substantial portion of its length.

78. A wear assembly in accordance with claim 73 wherein the wear member has a longitudinal axis, a front end of the socket includes opposed front bearing surfaces extending between the side surfaces, and each of the bearing surfaces extends generally parallel to the longitudinal axis.

79. A wear assembly comprising:

an adapter including a rear mounting end for securing the wear assembly to a wear surface and a forwardly extending nose;

a wear member including a front working end and a rearwardly opening socket defined by side surfaces and converging surfaces, wherein the side surfaces diverge as they extend toward the front working end; and

a lock for holding the wear member to the adapter.

80. A wear assembly in accordance with claim 79 wherein the nose includes a pair of converging walls and a pair of sidewalls, and the sidewalls extend generally parallel to the side surfaces of the wear member.

81. A wear assembly in accordance with claim 80 wherein the wear member defines a longitudinal axis, each side surface of the socket includes a side bearing surface between the converging surfaces to engage the adapter, and each side bearing surface faces toward a different one of the converging surfaces and extends generally in the same inclined direction relative to the longitudinal axis as the converging surface the side bearing surface faces.

82. A wear assembly in accordance with claim 81 in which each of the side surfaces includes a flank bearing surface that faces toward a different one of the converging walls than the side bearing surface of the same side surface.

83. A wear assembly in accordance with claim 82 in which the nose includes sidewalls and converging walls, the sidewalls each including a rail and a flank, wherein each rail contacts one of the side bearing surfaces and each flank contacts one of the flank bearing surfaces.

84. A wear assembly in accordance with claim 81 wherein the side bearing surfaces diverge as they extend away from the front working end.

85. A wear assembly in accordance with claim 80 in which the wear member is a point with a front digging edge.

86. A wear assembly in accordance with claim 79 in which a front end of the socket includes opposed front bearing surfaces extending between the side surfaces, and each of the front bearing surfaces extends generally parallel to the longitudinal axis.

87. A wear member defining a longitudinal axis and including a front working end and a rearwardly opening socket for receiving the nose, the socket

being defined by opposed converging surfaces each extending at an inclination to the longitudinal axis and by side surfaces, each side surface including a side bearing surface between the converging surfaces to engage the adapter, wherein each side bearing surface faces toward a different one of the converging surfaces and extends generally in the same inclined direction relative to the longitudinal axis as the converging face the side bearing surface surfaces.

88. A wear member in accordance with claim 87 in which a front end of the socket includes opposed front bearing surfaces extending between the side surfaces, wherein each of the front bearing surfaces extends generally parallel to the longitudinal axis.

89. A wear member in accordance with claim 87 in which each of the side surfaces includes a flank bearing surface that faces toward a different one of the converging walls than the side bearing surface of the same side surface.

90. A wear member in accordance with claim 89 in which each flank bearing surface widens as it extends rearward.

91. A wear member in accordance with claim 90 in which each side bearing surface is uniformly spaced from the converging surface that it faces along substantially the entire length of the side bearing surface.

92. A wear member in accordance with claim 89 in which the nose includes sidewalls and converging walls, the sidewalls each including a rail and a flank, wherein each rail contacts one of the side bearing surfaces and each flank contacts one of the flank bearing surfaces.

93. A wear member in accordance with claim 87 in which each side bearing surface along substantially its entire length is uniformly spaced from the converging surface that it faces.

94. A wear member in accordance with claim 87 wherein each bearing surface is at an acute angle in a transverse direction to the converging wall it faces.

95. A wear member in accordance with claim 87 wherein the side bearing surfaces diverge as they extend away from the front working end.

96. A wear member in accordance with claim 95 in which the side bearing surfaces extend generally along parallel, spaced apart planes that are aligned generally along the side surfaces of the socket.

97. A wear member in accordance with claim 87 in which is a point with a front digging edge.

98. A wear member in accordance with claim 97 in which the side bearing surfaces diverge from opposite sides of a plane aligned with the longitudinal axis and extending along the front digging edge.

99. A wear assembly in accordance with claim 87 in which the socket has a generally Z-shaped cross-sectional configuration over a substantial portion of its length.

100. A wear member defining a longitudinal axis and including a pair of converging walls extending to a narrowed front working end, a pair of sidewalls, and a rearwardly opening socket for receiving a nose of an adapter, the socket having a groove on each of a pair of opposite sides of the socket for receiving

rails on the adapter nose, wherein each groove diverges from a plane aligned with the longitudinal axis and extending along the narrowed front working end.

101. A wear member in accordance with claim 100 in which the socket has a generally Z-shaped cross-sectional configuration over a substantial portion of its length.

102. A wear member in accordance with claim 100 in which a front end of the socket includes opposed front bearing surfaces extending between the opposite sides of the socket, and each of the front bearing surfaces extends generally parallel to the longitudinal axis.

103. A wear member in accordance with claim 100 in which each groove has a substantially constant width and depth along substantially its entire length.

104. A wear member in accordance with claim 100 in which the grooves extend along substantially parallel planes aligned generally along the sidewalls.

105. A wear member in accordance with claim 100 in which is a point and the narrowed working end is a digging edge.

106. A wear member including a front working end and a socket opening in a rear end of the wear member, wherein the socket has a generally Z-shaped configuration over at least a substantial portion of its length.

107. A wear member in accordance with claim 106 in which a front end of the socket includes opposed front bearing surfaces extending between the sidewalls, and each of the front bearing surfaces extends generally parallel to a longitudinal axis of the wear member.

108. A wear member in accordance with claim 106 in which the Z-shaped socket includes a pair of lateral extensions in opposite corners, wherein the lateral extensions diverge as they extend rearward.

109. A wear member in accordance with claim 106 in which the working end terminates in a narrowed front end, and the lateral extensions of the socket diverge from opposite sides of a plane aligned with the longitudinal axis and extending along the narrowed end.

110. A wear member including a front working end and a rearwardly opening socket defined by side surfaces and converging surfaces, the socket having a groove on each of the side surfaces for receiving the rails, the grooves each being defined by one of the converging surfaces on one side of the groove and a side bearing surface on the other side of the groove, wherein the side bearing surfaces face in opposite directions.

111. A wear member in accordance with claim 110 wherein the side bearing surfaces extend generally at the same inclination as the converging surface which it faces.

112. A wear member in accordance with claim 111 wherein the socket has a substantially Z-shaped configuration along a substantial portion of its length.

113. A wear member in accordance with claim 110 wherein the side bearing surfaces each extends generally parallel to the longitudinal axis of the wear member.

114. A wear member in accordance with claim 110 wherein the socket has a substantially Z-shaped configuration along a substantial portion of its length.

115. A wear member in accordance with claim 110 wherein the side bearing surfaces extend generally in the same direction.

116. A wear member in accordance with claim 110 which has a longitudinal axis, wherein a front end of the socket includes opposed front bearing surfaces extending between the side surfaces and each of the bearing surfaces extends generally parallel to the longitudinal axis.

117. A wear member comprising a front working end and a rearwardly opening socket defined by side surfaces and converging surfaces, wherein the side surfaces diverge as they extend toward the front working end.

118. A wear member in accordance with claim 117 wherein the wear member defines a longitudinal axis, each side surface of the socket includes a side bearing surface between the converging surfaces to engage the adapter, and each side bearing surface faces toward a different one of the converging surfaces and extends generally in the same inclined direction relative to the longitudinal axis as the converging surface the side bearing surface faces.

119. A wear assembly in accordance with claim 118 in which each of the side surfaces includes a flank bearing surface that faces toward a different one of the converging walls than the side bearing surface of the same side surface.

120. A wear assembly in accordance with claim 119 wherein the side bearing surfaces diverge as they extend away from the front working end.

121. A wear assembly in accordance with claim 120 in which the wear member is a point with a front digging edge.

122. A wear assembly in accordance with claim 117 in which a front end of the socket includes opposed front bearing surfaces extending between the side surfaces, and each of the front bearing surfaces extends generally parallel to the longitudinal axis.

123. A lock for a wear assembly for an excavator having an adapter and a wear member, the lock comprising:

an elongate body that tapers toward one end along at least a substantial length of the body; and

a movable lock member that extends laterally from the body to secure the lock in the wear assembly.

124. A lock in accordance with claim 123 in which the body tapers along substantially its entire length.

125. A lock in accordance with claim 123 in which the body is generally L-shaped to include a bearing portion and a web generally at right angles to each other.

126. A lock in accordance with claim 123 in which the lock member is a set screw.

127. A lock in accordance with claim 123 in which the lock member is a resiliently biased detent.

128. A lock in accordance with claim 123 in which the body includes a shelf along its broader end to overlie and protect the lock member.